WHAT IS CLAIMED IS:

1. A wire load estimating method comprising:

reading a netlist;

generating connection information including the names of signals, the identification names and the names of pins of instances which include cells, macro blocks and synthesized blocks as described in said netlist;

dividing an area of a chip into two or more regions and determining connection point coordinates for each of said regions by the use of said connection information and locations of said instances as placed;

determining a wiring path by the use of said connection point coordinates; and

estimating a wire capacitance value and a wire resistance value with reference to said wiring path.

2. The wire load estimating method as claimed in claim 1 wherein said connection point coordinates are the center coordinates of said regions.

3. The wire load estimating method as claimed in claim 2 wherein the center coordinates of each of said regions are calculated by adding the top right vertex coordinates of each of said regions to the bottom left vertex coordinates of each of said regions and dividing the result of the addition by 2.

4. The wire load estimating method as claimed in claim 1 wherein said connection point coordinates are the pin coordinates of the macro blocks located within said regions.

5. The wire load estimating method as claimed in claim 4 wherein the pin coordinates of said macro block which is rotated or mirror-imaged are calculated by the use of the bottom left vertex coordinates of said macro block in a base condition, the location of said pin coordinates relative to the bottom left vertex coordinates, and at least one of transformation types of rotation

and mirror-imaging.

6. The wire load estimating method as claimed in claim 1 wherein said connection point coordinates are calculated by the use of the bottom left vertex coordinates of said regions, indications of the top side, the bottom side, the right side or the left side of said regions on which the respective connection points are located, the vertical or horizontal size of said regions, the coordinates of the connection points of two or more instances.

7. The wire load estimating method as claimed in claim 1 wherein the step of determining wiring paths comprises:

calculating the maximum value and the minimum value of the x-coordinates, as well as those of the y-coordinates, of a plurality of the connection points which are connected to a same signal;

calculating the difference between the maximum value and the minimum value of said x-coordinates, as well as those of said y-coordinates, and judging which side in the x-direction or the y-direction of a rectangular region including said connection points is longer than the other with reference to said differences;

arranging a root wire in the direction along the longer side;

connecting said root wire to the farthest one of said connection points from said root wire by means of a connection wire; and then

connecting, by means of a connection wire, each of the remaining points of said connection points to the wire which is one of said connection wires and said root wire and located closest to said each of the remaining points in a sequence from a closest connection point from said root wire.

8. The wire load estimating method as claimed in claim 1 wherein said wire capacitance value and said wire resistance value as estimated are output.

9. The wire load estimating method as claimed in claim 1 wherein a temporary repeater cell is inserted on the basis of the wire capacitance value and the

wire resistance value; and wherein

the respective instances are placed on the basis of the result of inserting the temporary repeater cell.

10. A repeater cell inserting method comprising:

ideally routing a wire on the basis of the coordinates of the connection points of each region without taking into consideration a roundabout route to avoid other wires;

finally determining the location of a repeater cell on the basis of the wire resistance value of the wire as ideally routed and the wire capacitance value of the wire as ideally routed; and

re-placing instances on the basis of the location of the repeater cell as finally determined.

11. A computer program product for estimating a wire load comprising:

a computer readable program code for causing the computer to read a netlist;

a computer readable program code for causing the computer to generate connection information including the names of signals, the identification names and the names of pins of instances which include cells, macro blocks and synthesized blocks as described in said netlist;

a computer readable program code for causing the computer to divide an area of a chip into two or more regions and determining connection point coordinates for each of said regions by the use of said connection information and locations of said instances as placed;

a computer readable program code for causing the computer to determine a wiring path by the use of said connection point coordinates; and

a computer readable program code for causing the computer to estimate a wire capacitance value and a wire resistance value with reference to said wiring path.

12. The computer program product for claim 11, wherein the computer

readable program code for causing the computer to determine connection point coordinates serves to assign the center coordinates of said regions to said connection point coordinates

13. The computer program product for claim 12, wherein the computer readable program code for causing the computer to determine connection point coordinates calculates the center coordinates of each of said regions by adding the top right vertex coordinates of each of said regions to the bottom left vertex coordinates of each of said regions and dividing the result of the addition by 2.

14. The computer program product for claim 11, wherein the computer readable program code for causing the computer to determine connection point coordinates serves to assign the pin coordinates of the macro blocks located within said regions to said connection point coordinates.

15. The computer program product for claim 14, wherein the computer readable program code for causing the computer to determine connection point coordinates calculates the pin coordinates of said macro block which is rotated or mirror-imaged by the use of the bottom left vertex coordinates of said macro block in a base condition, the location of said pin coordinates relative to the bottom left vertex coordinates, and at least one of transformation types of rotation and mirror-imaging.

16. The computer program product for claim 11, wherein the computer readable program code for causing the computer to determine connection point coordinates calculates said connection point coordinates by the use of the bottom left vertex coordinates of said regions, indications of the top side, the bottom side, the right side or the left side of said regions on which the respective connection points are located, the vertical or horizontal size of said regions, the coordinates of the connection points of two or more instances.

17. The computer program product for claim 11, wherein the computer readable program code for causing the computer to determine connection point coordinates comprises:

a computer readable program code for causing the computer to calculate the maximum value and the minimum value of the x-coordinates, as well as those of the y-coordinates, of a plurality of the connection points which are connected to a same signal;

a computer readable program code for causing the computer to calculate the difference between the maximum value and the minimum value of said x-coordinates, as well as those of said y-coordinates, and judging which side in the x-direction or the y-direction of a rectangular region including said connection points is longer than the other with reference to said differences;

a computer readable program code for causing the computer to arrange a root wire in the direction along the longer side;

a computer readable program code for causing the computer to connect said root wire to the farthest one of said connection points from said root wire by means of a connection wire; and then

a computer readable program code for causing the computer to connect, by means of a connection wire, each of the remaining points of said connection points to the wire which is one of said connection wires and said root wire and located closest to said each of the remaining points in a sequence from a closest connection point from said root wire.

18. The computer program product for claim 11, further including a computer readable program code for causing the computer to output said wire capacitance value and said wire resistance value as estimated.

19. The computer program product for claim 11, further including a computer readable program code for causing the computer to insert a temporary repeater cell on the basis of the wire capacitance value and the wire resistance value; and

a computer readable program code for causing the computer to place

the respective instances on the basis of the result of inserting the temporary repeater cell.

20. A computer program product for inserting a repeater cell comprising:

a computer readable program code for causing the computer to ideally route a wire on the basis of the coordinates of the connection points of each region without taking into consideration a roundabout route to avoid other wires;

a computer readable program code for causing the computer to finally determine the location of a repeater cell on the basis of the wire resistance value of the wire as ideally routed and the wire capacitance value of the wire as ideally routed; and

a computer readable program code for causing the computer to re-place instances on the basis of the location of the repeater cell as finally determined.